

CLAIMS:

1. A method for affixing two substrates to one another using a non-epoxy glue sealant containing photoinitiators, the method comprising the steps of:
  - 5 applying a non-epoxy glue sealant along an outer periphery of a first substrate;
  - placing a second substrate onto the first substrate containing the non-epoxy glue sealant; and
  - irradiating the glue sealant with laser beam radiation to polymerize the sealant
- 10 by directing light onto one of the first or the second substrate that is at least partially transparent to the laser beam.
2. The method of claim 1, wherein the step of irradiating the glue sealant includes irradiating the glue sealant with laser beam radiation to polymerize the
- 15 sealant by activating the photoinitiators.
3. The method of claim 1, wherein the step of irradiating the glue sealant includes irradiating the glue sealant with laser beam radiation that is incident onto one of first or the second substrate, so that the laser beam radiation subtends an
- 20 angle near normal to the first or the second substrate receiving the laser beam irradiation, the beam irradiation passing through the first or the second substrate onto the non-epoxy glue sealant.
4. The method of claim 1, wherein the step of irradiating the glue sealant
- 25 includes irradiating the glue sealant with laser beam irradiation that is incident onto one of the first or the second of the two the substrates, so that the laser beam subtends an angle at non-normal incidence with respect to the first or the second substrate receiving the laser beam radiation, enabling the laser directed onto the first or the second substrate to pass through the first or the second substrates onto the
- 30 non-epoxy glue.

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5. The method of claim 1, wherein the step of irradiating the glue sealant includes irradiating the glue sealant with laser beam irradiation from a pulsed laser.
6. The method of claim 1, wherein the step of irradiating the glue sealant includes irradiating the glue sealant with laser beam irradiation from a continuous (CW) laser.
7. The method of claim 5, wherein the step of irradiating the glue sealant includes irradiating the glue sealant with laser beam irradiation from a pulsed laser with a wavelength range 200-1500 nm.
8. The method of claim 5, wherein the step of irradiating the glue sealant includes irradiating the glue sealant with laser beam irradiation from a continuous (CW) laser with a wavelength range 200-1500 nm.

9. A LCD (Liquid Crystal Display) structure comprising:  
a first substrate and a second substrate;  
a non-epoxy glue sealant disposed between the first substrate and the second  
5 substrate near the peripheral edge of the first substrate and the second substrates;  
a firm sealant formed from the non-epoxy glue sealant by polymerization  
using laser producing a laser beam incident to the first or the second substrate so as  
to make the firm sealant affixed the first substrate to the second substrate, wherein  
the laser is programmed to trace out the pattern of the non-epoxy glue sealant to  
10 give rise to the polymerization.
10. The laser beam of claim 9, wherein the laser is driven by a servomotor to  
direct the laser beam to trace out the pattern of the non-epoxy glue sealant.
- 15 11. The laser beam as in claim 9, wherein the laser beam is driven by scanning  
mirrors to direct the laser beam to follow the pattern of the non-epoxy glue sealant.

12. A method on a LCD (Liquid Crystal Display) structure assembled according to a ODF (One Drop Fill) comprising:

assembling a first substrate and a second substrate forming a LCD panel using an ODF method with a non-epoxy glue sealant; and

5 irradiating the non-epoxy glue sealant with a laser to provide a UV (Ultraviolet) dosage into the non-epoxy glue sealant within the LCD panel of not less than 0.02 J/cm<sup>2</sup>.

13. The method of claim 12, wherein the step of irradiating the non-epoxy glue sealant with a laser includes irradiating with a laser with pulse widths in the range from femto-seconds to continuous wave.

14. The method of claim 12, wherein the step of irradiating the non-epoxy glue sealant with a laser includes irradiating with a laser at an impingement angle off of normal to the LCD panel so as to supply a UV dosage of not less than 0.02 J/cm<sup>2</sup> under any blocking images within the LCD panel.

15. The method of claim 12, wherein the step of irradiating the non-epoxy glue sealant with a laser includes irradiating with a laser to expose photo initiators in the non-epoxy glue sealant to take less time to cure than a thermal bake of the non-epoxy glue sealant using thermal initiators.

16. The method of claim 15, wherein the step of irradiating the non-epoxy glue sealant with a laser includes irradiating with a laser to expose the photo initiators in the non-epoxy glue sealant so as to minimize heat build up by reducing the necessary activation of thermal initiators, thus eliminating any mixing of the non-epoxy glue sealant and liquid crystal material.

17. The method of claim 12, wherein the step of irradiating the non-epoxy glue sealant with a laser includes irradiating with a laser to expose the photo initiators in the non-epoxy glue sealant from the laser using a back side of the LCD panel, wherein the backside of panel contains no blocking images.

18. The method of claim 12, wherein the step of irradiating the non-epoxy glue sealant with a laser includes irradiating with a Q-Peak pulsed laser.

19. The method of claim 12, wherein the step of assembling a first substrate and a second substrate forming a LCD panel using an ODF method with a non-epoxy glue sealant includes forming a LCD panel using an epoxy-acrylate glue sealant.

20. The method of claim 12, , wherein the step of irradiating the non-epoxy glue sealant with a laser includes irradiating with a continuous (CW) laser.

21. The method of claim 12, wherein the step of irradiating the non-epoxy glue sealant with a laser includes irradiating with laser at a wavelength range of 200-1500 nm.

22. The method of claim 12, wherein the step of irradiating the non-epoxy glue sealant with a laser includes irradiating with a continuous laser at wavelength range 200-1500 nm.

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23. The method of claim 12, wherein the step of irradiating the non-epoxy glue sealant with a laser includes irradiating with a laser controlled by a servo to trace out the pattern of the non-epoxy glue sealant to deliver not less than  $0.02 \text{ J/cm}^2$  to the non-epoxy glue sealant

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24. The method of claim 12, wherein the step of irradiating the non-epoxy glue sealant with a laser includes irradiating with a laser providing a beam which is directed by scanning mirrors to deliver not less than  $0.02 \text{ J/cm}^2$  by directing the laser beam to trace out the pattern of the non-epoxy glue sealant.

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